REMARKS

DRAWINGS

Examiner correctly points out that one of the Figure 3 drawings should be labeled as prior art. Applicant hereby submits a corrected drawing bearing the required caption. In the same replacement sheet, Applicant also corrected the placement of the notations "Fig. 3a" and "Fig. 3c" that were inadvertently switched in the drawing as originally submitted. The corrected captions comport with the text of the description.

CLAIMS

Examiner and Applicant overlooked the missing antecedents in claims 13, 14, 18, and 19. The error was a result of copying parts of prior claims without adjusting for different antecedents. Applicant has amended claims 13, 14, 18, and 19 accordingly.

Examiner correctly pointed out the missing phrase in claims 33 and 35. Applicant has amended claims 33 and 35 accordingly.

Examiner rejected claims 21, 22, and 26 as being anticipated by Kennon. Applicant respectfully submits that Kennon's turbine is not related in any way to the present invention. First, Kennon's apparatus is a type of turbine radically distinct from Applicant's turbine. Sometimes called a drag turbine, Kennon's apparatus works like a paddle wheel the blades of which are pushed by a force, here the airflow realized by a truck trailer being pulled at highway speed. Applicant's apparatus is sometimes called a lift turbine because it converts a fluid's linear flow into rotary motion through the lift imposed by the pressure differential across airfoil blades. Kennon's apparatus is analogous to an ancient square-rigger sailboat being pushed downwind by the wind's force on one side of a sail deployed perpendicular to the wind direction. Applicant's apparatus is analogous to a modern sailboat being sailed upwind by the lifting phenomenon of the wind across the airfoil shaped sail.

Furthermore, contrary to Examiner's statement (paragraph 3, page 3), Kennon does not, as Applicant does in claim 21, disclose a turbine with "blades constructed of discrete straight members of uniform cross section that are joined to approximate a turbine blade of continuous compound curvilinear design." Kennon's paddle wheel blades may have uniform cross section, and they may be discrete members, but they are not straight. Kennon's discrete members are

separately attached to a central member to form a turbine, but none of them are joined to approximate a turbine blade of any sort, much less a continuous compound curvilinear design.

The distinction is subtle, but powerful. Kennon's turbine is constructed of discrete (but not straight) blades joined to a common member, but the turbine blades of claim 21 are constructed of discrete straight members joined together to approximate a continuous compound curve. Kennon's turbine is constructed of several discrete one-piece blades; Applicant's turbine of claim 21 is constructed of a few blades, each fabricated from discrete straight members joined to approximate a complicated compound curve. Kennon does not anticipate claim 21.

For the same reasons, Kennon does not anticipate claim 22. Contrary to Examiner's statement (paragraph 4, page 3), Kennon does not, as Applicant does in claim 22, disclose a turbine with "blades constructed of a continuous member of uniform cross section formed into discrete straight sections so that said formed continuous member approximates a turbine blade of continuous compound curvilinear design." Kennon's paddle wheel blades may have uniform cross section, and they may be discrete members, but they are not formed into straight sections the result of which is an approximation of a continuous compound curvilinear design. Kennon's turbine is constructed of several discrete one-piece blades; Applicant's turbine of claim 22 is constructed of a few blades, each fabricated from a continuous member formed into discrete straight submembers, the overall result of which approximates a complicated compound curve.

Examiner rejects claim 26 as being anticipated by Kennon, referring to Kennon's Figure 8. Comparison of Kennon's Figure 8 and Applicant's Figure 5b demonstrates that claim 26 cannot possibly apply to Kennon's apparatus. Applicant's Figure 5b illustrates an angle Beta between the blade cross sectional axis and a line tangent to the circular plane of the turbine diameter. The cross sections of Kennon's turbine blades are not tangential to a circular plane containing the blade cross section and a turbine diameter. The lack of tangency is a product of the geometry of Kennon's design; a curved paddle wheel has no cross sectional axis capable of being tangent to the plane of the turbine's diameter.

In rejecting claim 29 as being anticipated by Cooksey, Examiner correctly points out that the Cooksey blade is a discrete bent member that was originally straight. However, claim 29 is limited to discrete straight blades "having a nonuniform cross section that increases as proximity to said turbine axis of rotation decreases." All of Cooksey's claims and drawings explicitly and clearly refer to rectangular steel members of uniform thickness. Such constraints limit

Cooksey's blade to a uniform cross section throughout, inapposite to and teaching away from the blade of claim 29. Applicant's Figure 6, in which cross sections 51 and 52 are shown to be different, illustrate how the scope of claim 29 does not include Cooksey's blade having uniform cross section. Applicant respectfully submits that Examiner was confusing frontal area and cross sectional area in making the anticipation rejection.

Examiner rejects claims 21-31 under obviousness over Lee in view of Cooksey. Applicant traverses. Lee claims a motor-driven turbine that slings air or water out its sides. Lee does not disclose or claim a lift component for efficiently converting linear fluid motion into rotary mechanical motion; he conversely converts mechanical rotary motion into inefficient linear motion through a fluid. Aside from the fact that such an apparatus is not capable of sufficient rearward force to achieve forward motion of any usefulness, Lee's turbine blades, like those of Cooksey, are not constructed of joined discrete straight members. Nor or the Lee blades constructed of a continuous member formed into discrete straight sections so that the formed continuous member approximates a turbine blade of continuous compound curvilinear design. Neither Lee nor Cooksey, nor their combination, are analogous to the present invention.

Examiner is correct in equating the detail of claims 23 and 24, standing alone, with Lee's turbine. However, dependent claims 23 and 24 do not stand alone, and only apply to the discrete-section blades of claims 21 and 22, respectively, which are not anticipated or made obvious by Cooksey and Lee.

Examiner's rejection of dependent claims 25 and 26 is misplaced for the same reason stated above with respect to claims 23 and 24. Moreover, Lee does not claim a plus or minus six degree range for his blade's angle of attack. Lee claims "about a ten degree pitch" (column 1, line 53), and "in the neighborhood of ten or eleven degrees" (column 2, line 27-28).

Examiner's rejection of dependent claims 27, 28, 30, and 31 is misplaced for the same reason stated above with respect to claims 23-26. Examiner's comment (paragraph 2, page 6) pertaining to Cooksey's bending straight members into flukes overlooks that fact that the present invention is made of discrete straight members, not discrete curved members.

Examiner mentioned three prior art patents. Clancy teaches three curvilinear blades, and claims blades of airfoil shape. However, each of Clancy's blades is, like those of Kennon, Cooksey, and Lee, a single member. Clancy's vertical windmill preferred embodiment is cut from a 55-gallon steel drum. His blades are not constructed of joined discrete straight members

or of a continuous member formed into discrete straight sections so that the formed continuous member approximates a turbine blade of continuous compound curvilinear design.

Examiner cites another prior art patent for teaching three curvilinear blades (labeled "20" in the Morris patent drawings). However, the three curved strips 20 shown in the drawings are not turbine blades. They are attached to and rotate with the water wheel vanes, but only as incidental stiffening structure, and "may be supplanted by an entire casing enclosing the vanes..." (column 5, lines 56-57). Morris describes his spiral strips as "nothing more than the residual part of a casing, the rest of which has been cut away" (column 5, lines 62-64).

Examiner also cites Martinez for curvilinear blades rotating on a ring. The Martinez apparatus is a drag turbine, does not utilize airfoil lift, causes an inlet and outlet for a flowstream to rotate on a ring strictly to concentrate the force of the fluid, and uses blades of one-piece, non-straight construction, contrary to the present invention.

Applicant respectfully requests reconsideration and placement of all specifications, drawings, and claims as amended in condition for allowance. If the Examiner believes a telephone conference would be helpful to allowance, a telephone conference is respectfully requested.

Although Applicant believes no fees are due at this time, the U.S. Patent and Trademark Office is authorized to charge any fees due, in full or in part, to Deposit Account 07-2400 (107269.6).

Respectfully submitted,

JACKSON WALKER, L.L.P.
100 Congress Ave., Suite 1100
Austin, TX 78701
(512) 236-2000
(512) 236-2002 fax

By David Allen Hall
David Allen Hall
Regis. No. 51,766

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